

**REMARKS**

This amendment is further to the Amendment filed March 8, 2010, which was supplemental to the Amendment of February 12, 2010.

As the amendment to claim 1 is expected to raise new issues that would require further consideration and/or search, this amendment is filed with a Request for Continued Examination.

The amendment is intended to place the application in condition for allowance.

**Status of the Claims**

Claim 1 is amended to describe the product features that result from the recited "obtained by anion exchange between the zirconia and/or the titanium dioxide and peroxotungstic acid in an acid medium having a pH lower than 3", i.e., the tungsten present in the solid consists essentially of tungsten of tetrahedral form.

Support for this recitation may be found for example, in paragraph 13, which points out that tetrahedral types and octahedral types are formed at a pH of 6 or greater; paragraph 36-38, which describe the affect of the process on obtaining tetrahedral structure, paragraph 15 explains that the prior art formed catalysts which substantially comprise the octahedral form; paragraph 25 describes that the presence of octahedral is not suitable for the claimed invention. Paragraph 26 explains

that the Raman spectrometry does not show peaks for octahedral tungsten (at  $800\text{cm}^{-1}$  and  $1000\text{cm}^{-1}$ ), but shows a significant peak at about  $935\text{ cm}^{-1}$  for tetrahedral tungsten, which suggests that the solid "consists essentially" of tetrahedral tungsten.

Claim 44 is new and is supported by paragraph 35 and the description of Figure 1.

Claims 1-3, 6-26, and 28-43 remain pending.

Claims 9-27 were withdrawn for being directed to a non-elected invention.

**Claim Rejections-35 USC §103**

Claims 1, 2, 6-8, 28-30, 42 and 43 stand rejected under 35 U.S.C. §103(a) as being unpatentable over VAUDAGNA et al. Applied Catalysis, 1997 ("VAUDAGNA"). This rejection is respectfully traversed for the reasons below.

Claim 1 recites that the solid comprises a single layer of tetrahedral tungsten, which makes up between 15 % and 25 % by weight of the total mass of the support, and the tungsten present in the solid consists essentially of tetrahedral form. Indeed, as further described in new claim 44, the Raman spectrometry of this type of solid shows a significant peak at about  $935\text{ cm}^{-1}$  for tetrahedral tungsten, but not any significant peaks for octahedral tungsten and microcrystals of tungsten (at  $800\text{cm}^{-1}$  and  $1000\text{cm}^{-1}$ ). Such a catalyst is obtained by the claimed method, which involves an anion exchange between the zirconia and/or the

titanium dioxide and peroxotungstic acid in an acidic medium having a pH lower than 3.

The position maintained emphasized that VAUDAGNA observes that the nature of surface tungsten species on  $\text{WO}_x\text{-Al}_2\text{O}_3$  depends on the amount of  $\text{WO}_3$  and that for concentrations below 15% there appear tetrahedrally coordinated species of the  $\text{WO}_4^{-2}$  type.

The Final Official Action stated that VAUDAGNA discloses a tungsten oxide on a zirconia support IT in table I, such catalyst comprises between 62 to 69% of tungsten in tetrahedral form. This range means that 62 to 69% of the deposited tungsten is in the tetrahedral form, the rest of the deposited tungsten being in octahedral form.

However, VAUDAGNA does not utilize a method according to the claimed invention. Indeed, VAUDAGNA discloses at page 270 that for more than 15 wt% of tungsten deposited on the support, the tungsten is both in tetrahedral and octahedral form, and that it is only when less than 15 wt% of tungsten is deposited on the support that the tungsten could be only in the tetrahedral form.

Thus, VAUDAGNA is contrary to the claimed solid of independent claim 1 (and method described). Moreover, with respect to new claim 44, the fact that VAUDAGAN discloses, at best, only 62-69% of tungsten is in tetrahedral form at amounts of tungsten greater than 15%, strongly suggests that one would have expected lines of resonance towards  $800\text{cm}^{-1}$  and  $1000\text{cm}^{-1}$  in

the Raman spectrum, which are characteristic of octahedral tungsten and microcrystals of tungsten.

Therefore, as VAUDAGNA teaches away from the claimed solid features and utilizes a method that produces a different solid, VAUDAGNA fails to render obvious claims 1, 2, 6-8, 28-30, and 42-43, and withdrawal of the rejection is respectfully requested.

Claims 3, 31-41 stand rejected under 35 U.S.C. §103(a) as being unpatentable over VAUDAGNA in view of SOHN et al. Langmuir 1998 ("SOHN"). This rejection is respectfully traversed for the reasons below.

Claim 3 recites that the solid has a total acidity, measured by means of adsorption of ammonia, of between 0.1 and 0.5 mmol/g.

SOHN discloses the relationship between acidity and  $\text{WO}_3$  content. However, there is nothing in SOHN which suggests that a catalyst with more than 15% tungsten having tetrahedric coordination could have such acidity.

Thus, SOHN is unable to remedy the shortcomings of the VAUDAGNA for reference purposes, and claim 3 and claims 31-41 are not obvious over VAUDAGNA in view of SOHN.

Therefore, withdrawal of the rejection is respectfully requested.

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**Conclusion**

In view of the foregoing remarks, this application is in condition for allowance at the time of the next Official Action. Allowance and passage to issue on that basis is respectfully requested.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future submissions, to charge any deficiency or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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